

Growing Technology Leaders

VDP leads seventh graders on the road to math and science professions

By John Joyce, NSWC Dahlgren Division Corporate Communications

Sen. John Warner, R-Va., told about 1,700 middle school students that they are the future of the country at the Virginia Demonstration Project (VDP) Exposition in Fredericksburg, Va., where students were showcasing their scientific achievements.

"America is falling behind," Warner said, "as we train 70,000 scientists and engineers this year, China graduates 600,000 scientists and engineers. We need a wake-up call, and you are sending that wake-up call."

The VDP is a part of the N-STAR (Naval Research — Science and Technology for America's Readiness) program, which was launched in 2004 by the Office of Naval Research (ONR). It was initiated to show young students that careers in math, science and engineering are fascinating, fun and socially relevant.

"There are worlds of problems waiting for you to solve," said the Chief of Naval Research Rear Adm. William Landay. "You have discovered that engineering is really a lot of fun when you can get your hands on it," said Landay, who is also the Assistant Deputy Commandant of the Marine Corps for Science and Technology.

Conceived as a multi-year, state-wide outreach effort involving high schools, middle schools and community colleges, the VDP is in its first phase and is limited to middle schools in King George, Stafford and Spotsylvania counties. The VDP program uses the science and engineering staff of the Naval Surface Warfare Center (NSWC) Dahlgren Division as mentors to the students and teachers.

A host of military and civilian leaders joined Sen. Warner and Rear Adm. Landay April 13 to commend the students and endorse the VDP program that gave the students an opportunity to work in their classrooms side-by-side with Navy scientists and engineers on technological projects designed to solve today's problems.

"The students were outstanding in their presentations and in tying the technology to real-world environmental issues," said VDP program director Bob Stiegler, a retired engineer from the NSWC Dahlgren Division. "It is evident by the level of the speakers and the number and level of those in attendance, that the project has a

broad base of support. And not just in words, but through active support of the leadership on all levels — Sen. Warner's office, ONR, NSWC Dahlgren, the county school districts and the universities."

The VDP Expo confirmed for attendees, including NSWC Dahlgren Division Commanding Officer Capt. Joseph McGettigan, Fredericksburg Chamber of Commerce officials, King George, Stafford and Spotsylvania county middle school principals and school board members that a new generation of Americans can indeed make the world better and assist in national security efforts armed with math and science skills.

Students, working in teams of six to eight, used robots, computers, Microsoft PowerPoint presentations and movies they wrote, narrated and produced to explain their creative solutions to save lives, clean oil spills and clear mines from land and water.

"This is the American dream — developing things to make people's lives better," McGettigan said. "When we give these kids a problem, there's a lot of excitement as we watch their enthusiasm in solving it with a skill and technical savvy they didn't have before."

One way VDP generates the interest of students in math and science is through their teachers. The program provides middle school teachers with opportunities to team with scientists and engineers from the mentor-rich environment at the naval warfare centers.

"We were able to see science and engineering in real jobs doing real things for all of us," said Dr. Jean Murray, Superintendent of Stafford County Public Schools. "Our students learned more than science and math. They have learned about creativity and problem solving, and how to learn by sharing information."

VDP common themes featured robotics problems that were integrated into four subject areas: math, science, language arts and civics. "N-STAR definitely changed my mind," said Kaitlin McDonough, an H.H. Poole Middle School seventh grader after giving a brief about how to clean up an oil spill and protect coral reefs and marine life. "Before our project, I saw math as just numbers."

Mentors from NSWC Dahlgren, approximately 35 scientists and engineers, shared real-world experiences to shape positive perceptions about math and science among students preparing for high school. "Although this program was developed to encourage young people to consider careers in technical fields, working with these young minds reinvigorated me and made me more appreciative of my work," said Bruce Copeland, a Strategic and Weapon Control Systems Department engineer, who mentored students at Chancellor Middle School.

"With all the reports about the inability of young people to concentrate on a single task, it was enlightening to see the focus and intensity of purpose that some of the young men and women could bring to bear on solving a complex problem. It improves my outlook for the future of our nation," Copeland said.

Sen. John Warner, R-Va., and participants of the VDP Exposition in Fredericksburg, Va., April 13, 2006.



VDP's ultimate goal is to establish educational outreach programs at other Navy research and development centers throughout the country. The initiative could eventually expand beyond the Navy and evolve into a national demonstration project encompassing all the Defense Department laboratories in a sustained effort to secure the long-term competitiveness of America's science and technology workforce by hooking more students on math and science at an earlier age.

"After approaching this problem from a practical aspect, our students have a clearer understanding of what public policy is and can see themselves in the future as citizens who have an active part to play in public policy," said H. H. Poole Middle School civics teacher Nancy Vitale.

For more information about the Virginia Demonstration Project, go to the N-STAR Web site at <http://www.nstarweb.com/>.

CHIPS

Calling All High School Students ... to a Science Fair

By Sharon Anderson

The Naval Science Awards Program is a U.S. Navy and Marine Corps program that encourages America's students to develop an interest in science and engineering. NSAP recognizes the accomplishments of eligible students at regional and state science and engineering fairs, and the International Science and Engineering Fair (ISEF).

The Office of Naval Research sponsors NSAP for the Department of the Navy. The ONR executes and promotes science and technology programs of the naval services through universities, government laboratories and nonprofit and for-profit organizations.

The Navy and Marine Corps participate each year in more than 425 regional, district and state science and engineering fairs in which high school students exhibit their projects. Qualified experts drawn from local Navy and Marine Corps activities serve as judges, with subsequent presentation of prizes to successful competitors.

Each year the ONR participates in the ISEF, administered by Science Service. Nearly 1,200 high school students, in grades 9 through 12, representing over 500 science, math and engineering fairs affiliated with Science Service, display their research projects and vie for hundreds of special awards. At the ISEF, the ONR selects one winner in each of the 14 scientific disciplines, three students from any category who have projects deemed to have particular naval relevance, and one two-person team to receive an \$8,000 undergraduate scholarship, payable at \$2,000 per year.

Nineteen students were named "Naval Science Award Winners" at the 2006 ISEF in Indianapolis, Ind. The fair, held May 7-12 at the Indiana Convention Center, provided students with a diverse learning experience. Katherine Hesterman Newcomb, a Navy Reservist and microbiologist/medical educator who has been a Navy ISEF judge

since 1989, said she enjoys the students' enthusiasm and continues to be impressed by how hard they work on their projects.

"The projects become more sophisticated and specialized with each year. A greater percentage of students, have access to research laboratories in which to carry out their work and, overall, the mentoring seems to improve each year. This contributes to increased difficulty in judging, with the necessary time limitations. Although people often find this hard to believe but, if you ask any of the judges, you will hear that the complexity of a number of the projects is often at a master's or doctoral level," Newcomb said.

In addition to naval scientific areas, other project categories included the behavioral-social sciences, botany, environmental science, medicine and health, space science and zoology. The Navy hopes the fairs will excite the students' interest in science or engineering so they will pursue advanced degrees in these areas.

Midshipman 2nd Class Craig Wright, a three-time competitor in the science fairs and now a Navy ISEF judge, said participating in the fairs helps students decide on a career path.

"I can personally attest to the significance that the science fair played in my life. Researching and competing in the fair challenged my mind more than any other program I ever engaged in. Now a midshipman at the U. S. Naval Academy, I accredit a large amount of my success at the academy to what I learned through the science fairs," Wright said.

The fairs also give students a chance to talk with other students and discover new fields of study.

"Participating students realize it is an excellent venue to meet other students with similar interests, to meet mentors working in the field, to learn of opportunities for internships, and to learn of the variety of job opportunities involving science. Seeing other projects often sparks ideas for their own research. For their friends who have not participated, they can see the positive impact this experience has, and may pique their interest to also become involved," Newcomb said.

Wright agreed that participating in the fairs opens new horizons for students. "I was able to investigate a wide variety of scientific disciplines without the fear of committing to a single subject. Now in college, I have a good idea of my interests and am pursuing a degree in aerospace engineering."

Naval Science Awards are open to high school students in grades 9 through 12 who are citizens or permanent residents of the United States or its territories at the time of their selection.

According to Newcomb, just attending a science fair is a memorable experience. "I believe that anyone who attends the ISEF cannot help but be impressed at these young scientists' work and dedication. To use one of their expressions, 'It is awesome!'"

For more information contact the NSAP program manager at (703) 696-4111 or NSAP_help@onr.navy.mil.

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